

# Hossein Rabbani

Senior Member,  
IEEE

**Professor**  
Department of Biomedical Engineering,  
Isfahan University of Medical Sciences  
&  
Medical Image & Signal Processing  
Research Centre



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## Objective and Fields of Interest

**Objective** Research in multidimensional signal processing including biosignal analysis and modeling (especially medical image/volume), sparse transforms, noise reduction and estimation problem, image/video restoration, probability models of sparse domain's coefficients.

**Fields of interest** Biomedical signal analysis and processing including multidimensional data, time-frequency analysis tools including x-lets, denoising, statistical signal processing, applied mathematics (currently I am focusing on Statistical & Mathematical Modeling of Medical Signals and Systems).

## Academic Qualifications

- 2013 –2014** Postdoctoral Research Fellow, Duke Eye Center, Durham, United States.
- Research topic: **“Automatic Analysis of Various Types of Leakages in Fluorescein Angiograms and Optical Coherence Tomography (OCT)”**
  - Supervisor: Prof. Sina Farsiu
- 2011** Postdoctoral Research Scholar, The University of Iowa, Iowa, United States.
- Research topic: **“Optical Coherence Tomography (OCT) Image Analysis”**
  - Supervisors: Prof. Milan Sonka & Prof. Michael Abramoff
- 2007** Visiting Research Scholar, Electrical & Computer Engineering Department, Queen’s University, Kingston, Ontario, Canada.
- Research topic: **“Statistical modeling of sparse domain’s coefficients and its application to medical image/volume denoising”**
  - Supervisor: Prof. Saeed Gazor.

2002 – 2008

**Doctoral Researches, Bioelectronics** (1<sup>st</sup> rank in entrance exam)

**Department of Biomedical Engineering** (The Center of Excellence on Biomedical Engineering in Iran), **Amirkabir University of Technology** (Tehran Polytechnic), **Tehran, Iran.**

- Dissertation research topic: **“Medical Image/Volume Noise Reduction in Multidimensional Complex Wavelet Transform Domain Using Bivariate Mixture Models”**
- Supervisor: Prof. Mansur Vafadust
- Passed Ph.D. courses: advanced digital signal processing, biomedical signal processing, advanced biomedical signal processing, advanced digital image processing, advanced digital communication, spread spectrum, system identification, advanced neural network.
- Passed the qualifying examination in Sept. 2004.

2000 – 2002

**Master of Science, Bioelectronics** (3<sup>rd</sup> rank)

**Department of Biomedical Engineering** (The Center of Excellence on Biomedical Engineering in Iran), **Amirkabir University of Technology** (Tehran Polytechnic), **Tehran, Iran.**

- Dissertation research topic: **“Video Restoration based on Motion Estimation in Complex Wavelet Domain”**
- Supervisor: Prof. Mansur Vafadust
- Advisor: Prof. Shohreh Kasaei
- Passed M.Sc. courses: digital signal processing, biomedical signal processing, digital image processing, medical imaging systems, stochastic processes, statistical pattern recognition, digital control systems, bioinstrument, and neural network.

1997 – 2000

**Bachelor of Science, Communication** (1<sup>st</sup> rank)

**Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan, Iran.**

- Dissertation research topic: **“Designing and Constructing of Laser Communication between Two Computers”**

## Work Experience

2003-2016

**Teaching**

- **Undergraduate level courses**  
(B.Sc. students, Amirkabir University of Technology):

- Statistics and probability
  - Analog and digital communication systems
- **Graduate level courses**  
(M.Sc. & Ph.D. students, Isfahan University of Medical Sciences):
- Advanced Biomedical Signal Processing
  - Biological Signal & System Modeling
  - Biomedical Signal Processing
  - Digital Image Processing
  - Digital Signal Processing
  - Information Technology in Biomedicine
  - Medical Image Processing & Analysis
  - Neural Networks
  - Pattern Recognition
  - Stochastic Processes
  - Sparse Transforms and Their Applications in Signal Processing
  - System Identification
  - Advanced Biological Signal & System Modeling
  - Convex Optimization

### **Supervising and Advising**

- **Supervisor:**

Postdoc projects (in progress):

- Intra-retinal layer and fluid segmentation of 3D OCT images by deep learning
- Classification of ocular images using optimum basis functions (DL & MCA)
- OCT modeling: statistical modeling vs. geometrical modeling vs. energy-based modeling
- Synchronized analysis of EEG, MRI images, and SPECT images of patients suffering from seizure

PhD dissertation researches:

- Combination of graph based algorithms and time-frequency methods for processing of OCTs
- Seeking an appropriate feature extraction method for breast cancer recurrence prediction based on microarray gene expression data
- A new model based on Gaussianization of OCT data
- Automatic analysis of features of AMD in OCT images using 3D curvelet transform
- Automatic detection of acute myeloid leukemia in microscopic images using dictionary learning

- Automatic diagnosis of Mild Cognitive Impairment (MCI) by dictionary learning -based analysis of EEG signals
- 3D OCT Classification by Deep Learning
- Fully automated segmentation of fluid/cyst regions in OCT images using neutrosophic sets and graph algorithms

PhD dissertation researches (in progress):

- 3D Sparse Reconstruction of Cone-beam CT
- Multivariate Statistical Modeling of OCT Images
- Sparse Representation of PH Monitoring Signals
- Energy-based Modeling of OCT Images
- Sparse Representation of OCT Images

M.Sc. dissertation researches:

- Polyp detection/segmentation in video colonoscopy by convolutional neural network
- Image restoration using Gaussian mixture models with neighborhood nonlocal clustering
- Evaluation of the symmetricity of cup to disk ratio in left and right eyes of normal subjects
- Mosaicing macula OCT images and OCT optical disk
- Designing a dictionary for OCT images based on K-SVD algorithm using texture characteristics of retinal layers for image segmentation
- Automatic segmentation of corneal layer boundaries in OCT images and obtaining 3D maps of the entire thickness of cornea and inner layers
- Automatic detection of leishman bodies in bone marrow samples from patients with visceral leishmaniasis using level set method
- Evaluation of asymmetricity of right and left eyes of normal subjects using extracted features from optical coherence tomography (OCT) and color fundus images
- Automatic diagnosis of malaria based on complete circle-ellipse fitting search algorithm
- Automatic segmentation and recognition of lung nodules in thoracic CT images using active contour modeling and convex hull
- Segmentation of enhanced depth imaging optical coherence tomography (EDI-OCT) images using graph cut algorithm based on Gaussian mixture model of wavelet features
- Forming projection images from retinal layers on the 3D optical coherence tomography (OCT) data and fusion of them using curvelet transform to form an optimal projection image

- Evaluation of image pre-compensation methods for enhancing visual efficiency in the presence of higher order ocular optical aberrations
- Extraction of 15-lead ECG signal from vectorcardiogram (VCG) signal using partial linear transformation for providing information from posterior side of the heart
- Detection of foveal avascular zone (FAZ) based on curvelet transform for grading of diabetic retinopathy
- Extraction of nucleolus candidate zone in white blood cells of peripheral blood smear images using curvelet transform
- A comparison between hp version of finite element method with EIDORS for electrical impedance tomography
- A comparison between ECG and VCG signals for detection of ischemia location
- Estimation of somatosensory evoked potentials with multi-adaptive filters
- A contourlet-based watermarking method for medical images
- Automatic detection of diabetic retinopathy by extraction of retinal image features in curvelet domain
- Estimating depth of anesthesia based on wavelet transform and neuro-fuzzy systems
- Microcalcification detection in mammographic images using fractal model in wavelet domain
- Persian script character recognition using PCA
- A comparison between ECG and VCG for detection of ischemia
- Automatic detection and recognition of lung nodule in CT image based on active contour
- Complexity analysis of EEG signals for Mild Cognitive Impairment (MCI) diagnosis
- 3D segmentation of proximal enamel lesions in micro-ct images
- Automatic analysis of tracheal acoustic signals for apnea detection and introducing new clinical indices of depth of sedation
- Statistical modeling of 3D OCT data by mixture model

B.Sc. dissertation research entitled:

- Angle detection for biomaterial based on image processing

- **Advisor:** M.Sc. dissertation researches entitled:

- Transform based ellipse detection in microscopic images using elliptical basis functions
- Automatic extraction and recognition of myeloma cell in microscopic bone marrow aspiration images
- Extraction of candida fungus from pap smear images based on ridgelet transform for vulvovaginal candidiasis diagnosis

- Extraction of vessels, optic disc and fovea avascular zone from fundus fluorescein angiogram based on Hessian analysis of directional curvelet subbands
- Medical image compression with multi-wavelet
- A new adaptive technique for fast and accurate estimation of SSAEP

## Honors

- I was really interested in studying mathematics before entering university and all of my grades in this field were excellent. I participated in the entrance exam of universities.
  - My grades in this exam were:
    - ✓ Mathematics: **98/100**
    - ✓ Physics: **86.7/100**
    - ✓ Chemistry: **91.2/100**
  - I had this opportunity to choose **all of the best universities** in Iran.
- B.Sc. Degree with the honor of the **1<sup>st</sup> rank** from Isfahan University of Technology.
- M.Sc. Degree with the honor of the **3<sup>rd</sup> rank** from Amirkabir University of Technology.
- **1<sup>st</sup> rank** in the Ph.D. entrance exam of Amirkabir University of Technology in bioelectrics.
- **1<sup>st</sup> rank** in the Ph.D. entrance exam of Isfahan University of Technology in communication engineering.
- **Outstanding selected Ph.D. thesis** by Iranian Society for Biomedical Engineering.
- **The winner of national prize of “Young Assistant Professors”.**
- **IEEE, Elected Senior Member, 2013**

## Membership

- ✓ IEEE Senior Member
- Signal Processing Society, Engineering in Medicine and Biology Society

## Article Reviewer

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|--|--|
| ✓ IEEE Trans. on Image Processing            | ✓ IEEE Trans. on Circuits & Systems for Video Technology           |
| ✓ IEEE Trans. on Signal Processing           | ✓ IEEE Trans. on Multimedia  |
| ✓ IEEE Trans. on Medical Imaging             | ✓ IEEE Trans. on Systems, Man, and Cybernetics-Part B: Cybernetics |
| ✓ IEEE Trans. on Biomedical Engineering      | ✓ IEEE Trans. on Biomedical Circuits and Systems                   |
| ✓ IEEE Signal Processing Letters             | ✓ IEEE Journal of Biomedical and Health Informatics                |
| ✓ IEEE Reviews in Biomedical Engineering     | ✓ IEEE Access  |
| ✓ IEEE Trans. on Geoscience & Remote Sensing |  |

- ✓ IEEE Trans. on Instrumentation & Measurement
- ✓ IET Image Processing Journal
- ✓ IET Signal Processing Journal
- ✓ IET Computer Vision
- ✓ Pattern Recognition
- ✓ Signal Processing
- ✓ Computers in Biology & Medicine
- ✓ Digital Signal Processing
- ✓ Biomedical Signal Processing & Control
- ✓ Pattern Recognition Letters
- ✓ Ultrasonics
- ✓ Journal of Biophotonics
- ✓ Journal of Biomedical Optics
- ✓ Measurement
- ✓ Computer Methods and Programs in Biomedicine,
- ✓ Journal of Visual Image Communication & Representation
- ✓ Applied Optics
- ✓ Optics Letters
- ✓ Journal of Optical Society of America A
- ✓ Applied Soft Computing
- ✓ Biomedical Optics Express
- ✓ PLOS ONE
- ✓ Journal of Medical Systems
- ✓ The Computer Journal
- ✓ Medical & Biological Engineering & Computing
- ✓ Neural Computing & Applications
- ✓ Journal of Applied Mathematics
- ✓ EURASIP Journal on Image and Video Processing
- ✓ Signal, Image and Video Processing
- ✓ Multidimensional Systems & Signal Processing
- ✓ Circuits, Systems & Signal Processing
- ✓ Current Medical Imaging Reviews
- ✓ International Journal of Pattern Recognition and Artificial Intelligence
- ✓ Journal of Innovative Optical Health Sciences
- ✓ Medical Principles & Practice
- ✓ Measurement Science Review
- ✓ Electronics Letters
- ✓ SPIE Journal of Medical Imaging
- ✓ Complexity
- ✓ Progress in Electromagnetic Research (PIER)
- ✓ BMC Open
- ✓ BMC Medical Imaging
- ✓ Biomedical Engineering OnLine
- ✓ International Journal of Imaging Systems and Technology
- ✓ Mathematical Problems in Engineering
- ✓ Cognitive Neurodynamics
- ✓ Journal on Modern Optics
- ✓ Optik
- ✓ Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization
- ✓ Journal of Research in Medical Sciences
- ✓ Iranian Journal of Biomedical Engineering
- ✓ Iranian Journal on Electrical & Computer Engineering
- ✓ Iranian Journal of Physics Research
- ✓ Several International IEEE Conferences and National Conferences

## Editorial Board Member:

- ✓ Journal of Isfahan Medical School
- ✓ Journal of Medical Signals and Sensors (Editor-in-Chief)

## Publications

### International Journal Papers

1. M. Mokhtari, **H. Rabbani\***, A. Mehridehnavi, R. Kafieh, M. Akhlaghi, M. Pourazizi, L. Fang, "Local comparison of cup to disc ratio in right and left eyes based on fusion of color fundus images and OCT B-scans", *Information Fusion*, vol. 51, pp. 30-41, 2019.
2. M. Lashgari, M. Shahmoradi, **H. Rabbani\***, M. Swain, "Missing Surface Estimation Based on Modified Tikhonov Regularization: Application for Destructed Dental Tissue," *IEEE Transactions on Image Processing*, vol. 27, no.5, pp. 2433-2446, 2018.
3. R. Rasti, **H. Rabbani\***, A. Mehridehnavi and F. Hajizadeh, "Macular OCT Classification using a Multi-Scale Convolutional Neural Network Ensemble," *IEEE Transactions on Medical Imaging*, vol. 37, no. 4, pp. 1024-1034, 2018.
4. A. Rashno, D. D. Koozekanani, P. M. Drayna, B. Nazari, S. Sadri, **H. Rabbani**, K. K. Parhi\*, "Fully-Automated Segmentation of Fluid/Cyst Regions in Optical Coherence Tomography Images with Diabetic Macular Edema using Neutrosophic Sets and Graph Algorithms," *IEEE Transactions on Biomedical Engineering*, vol. 65, no. 5, pp. 989-1001, May 2018.
4. A. Abbasi, A.H. Monadjemi\*, L. Fang, **H. Rabbani**, "Optical Coherence Tomography Retinal Image Reconstruction via Nonlocal Weighted Sparse Representation", *Journal of Biomedical Optics*, vol. 23, no. 3, 036011, 2018.
5. R. Rasti, A. Mehri Dehnavi\*, **H. Rabbani**, F. Hajizadeh, "Automatic Diagnosis of Abnormal Macula in Retinal OCT Images Using Wavelet-Based Convolutional Neural Network Features and Random Forests Classifier", *Journal of Biomedical Optics*, vol. 23, no. 3, 036011,035005, 2018.
6. S. Momeni, O. Sarrafzadeh, **H. Rabbani\***, "Automatic Brain Aneurysm Extraction in Angiography Videos Using Circlet Transform and a Modified Level Set Model", *Current Medical Imaging Reviews*, vol. 14, no. 6, pp. 923-932, 2018.
7. M. Momenzadeh, A. Vard\*, A. Talebi, A. M. Dehnavi, **H. Rabbani**, "Computer-Aided Diagnosis Software for Vulvovaginal Candidiasis Detection From Pap Smear Images", *Microscopy Research & Technique*, vol. 81, no. 1, pp. 13-21, 2018.
8. A. Ahdi, **H. Rabbani\***, A. Vard, "A Hybrid Method for 3D Mosaicing of OCT Images of Macula and Optic Nerve Head," *Computers in Biology and Medicine*, vol. 91, pp. 277-290, 2017.
9. L. Fang \*, Ch. Wang , Sh. Li, J. Yan, X. Chen, **H. Rabbani**, "Automatic Classification of Retinal 3D OCT Images Using Principle Component Analysis Network with Composite Kernels", *Journal of Biomedical Optics*, vol. 22, no. 11, 116011, 2017.



10. A. Rashno, B. Nazari, D. D. Koozekanani, P.M. Drayna, S. Sadri, **H. Rabbani** and K.K. Parhi\*, "Fully-Automated 2D and 3D Segmentation of Fluid Regions in Exudative Age-Related Macular Degeneration Subjects: Kernel Graph Cut in Neutrosophic Domain," PLOS ONE, vol. 12, no. 10, e0186949, 2017.
11. Z. Amini, **H. Rabbani**\*, "Optical Coherence Tomography Image Denoising Using Gaussianization Transform", Journal of Biomedical Optics, vol. 22, no. 8, pp. 1-12, 2017.
12. M. Momenzadeh, M.R. Sehhati\*, A. Mehri Dehnavi, A. Talebi, **H. Rabbani**, "Automatic Diagnosis of Vulvovaginal Candidiasis from Pap smear Images", Journal of Microscopy, vol. 267, no. 3, pp. 299-308, 2017.
13. L. Fang\* , L. Yang , Shutao Li , **H. Rabbani** , Zh. Liu , X. Chen , Q. Peng, "Automatic Detection and Recognition of Multiple Macular Lesions in Retinal OCT Images with Multi-instance Multi-label Learning", Journal of Biomedical Optics, vol. 22, no. 6, 066014, 2017.
14. M.J. Allingham\*, D. Mukherjee, E.B. Lally, **H. Rabbani**, P.S. Mettu, S.W. Cousins, S. Farsiou, "A Quantitative Approach to Predict Differential Effects of Anti-VEGF Treatment on Diffuse and Focal Leakage in Patients with Diabetic Macular Edema - A Pilot Study", Translational Vision Science & Technology, vol. 7, no. 6, 2017.
15. Z. Amini, **H. Rabbani**\*, "Letter to the Editor: Correction to “The Normal-Laplace Distribution and its Relatives”", Communications in Statistics - Theory and Methods, vol. 46, no. 4, pp. 2076-2078, 2017.
16. M. Esmaeili, A. Mehri-Dehnavi, and **H. Rabbani**\*, "3D Curvelet-Based Segmentation and Quantification of Drusen in Optical Coherence Tomography Images", Journal of Electrical and Computer Engineering, vol. 2017 (2017), Article ID 4362603, 12 pages.
17. Z. Amini, **H. Rabbani**\*, "Statistical Modeling of Retinal Optical Coherence Tomography", IEEE Transactions on Medical Imaging, vol. 35, no. 6, pp. 1544-1554, 2016.
18. O. Sarrafzadeh, **H. Rabbani**, A. Mehri Dehnavi\*, A. Talebi, "Analyzing Features by SWLDA for the Classification of HEp-2 Cell Images Using GMM", Pattern Recognition Letters, vol. 82, part 1, pp. 44-85, Oct. 2016.
19. M. Shahmoradi, M. Lashgari, **H. Rabbani**\*, J. Qin, M. Swain, "A comparative study of new and current methods for dental micro-CT image denoising", Dentomaxillofacial Radiology, vol. 45, no. 3, 2016.
20. Z. Amini, **H. Rabbani**\*, "Classification of Medical Image Modeling Methods: A Review", Current Medical Imaging Reviews, vol. 12, no. 2, pp. 130-148, 2016.
21. **H. Rabbani**, R. Kafieh\*, M. Kazemian Jahromi, et al., "Obtaining Thickness Maps of Corneal Layers Using the Optimal Algorithm for Intracorneal Layer Segmentation," International Journal of Biomedical Imaging, vol. 2016, Article ID 1420230, 11 pages, 2016.
22. M. Niknejad, **H. Rabbani**\*, M. Babaei-Zadeh, "Image Restoration Using Gaussian Mixture Models with Spatially Constrained Patch Clustering," IEEE Transactions on Image Processing, vol. 24, no. 11, pp. 3624-3636, Nov. 2015.
23. R. Kafieh, **H. Rabbani**\*, I. Selesnick, "Three Dimensional Data-Driven Multi Scale Atomic Representation of Optical Coherence Tomography", IEEE Transactions on Medical

Imaging, vol. 34, no. 5, pp. 1042-1062, 2015.

24. **H. Rabbani\***, M.J. Allingham, P.S. Mettu, S.W. Cousins, S. Farsiu, “Fully Automatic Segmentation of Fluorescein Leakage in Subjects with Diabetic Macular Edema”, *Investigative Ophthalmology and Visual Science*, vol. 56, no. 3, pp. 1482-1492, 2015.
25. MR. Sehhati\*, A. Mehri, **H. Rabbani**, M. Pourhossein, “Stable Gene Signature Selection for Prediction of Breast Cancer Recurrence Using Joint Mutual Information”, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, vol. 12, no. 6, pp. 1440-1448, 2015.
26. Z. Saeedizadeh, A. Mehri\*, A. Talebi, **H. Rabbani**, O. Sarrafzadeh, A. Vard, “Automatic Recognition of Myeloma Cells in Microscopic Images using Bottleneck algorithm, Modified Watershed and SVM Classifier”, *Journal of Microscopy*, vol. 261, no. 1, pp. 46-56, 2015.
27. R. Kafieh, **H. Rabbani\***, F. Hajizadeh, M. D. Abramoff and M. Sonka, “Thickness Mapping of Eleven Retinal Layers in Normal Eyes Using Spectral Domain Optical Coherence Tomography”, *Journal of Ophthalmology*, Article ID 259123, 14 pages, 2015.
28. A. Soltanipour, S. Sadri, **H. Rabbani\***, MR Akhlaghi, "Analysis of Fundus Fluorescein Angiogram Based on the Hessian Matrix of Directional Curvelet Sub-bands and Distance Regularized Level Set Evolution", *Journal of Medical Signals and Sensors*, vol. 5, no.3, pp. 141-155, 2015.
29. **H. Rabbani\*** and S. Gazor, “Local Probability Distribution of Natural Signals in Sparse Domains,” *International Journal of Adaptive Control and Signal Processing*, vol. 28, no. 1, pp. 52-62, Jan. 2014.
30. SH. Hajeb, **H. Rabbani\***, MR. Akhlaghi, “A New Combined Method Based on Curvelet Transform and Morphological Operators for Automatic Detection of Foveal Avascular Zone”, *Signal, Image & Video Processing*, vol. 8, no. 2, pp. 205-222, Feb. 2014.
31. H. Danesh, R. Kafieh, **H. Rabbani\***, F. Hajizadeh, “Segmentation of Choroidal Boundary in Enhanced Depth Imaging OCTs Using a Multiresolution Texture Based Modeling in Graph Cuts”, *Computational and Mathematical Methods in Medicine*, vol. 2014, Article ID 479268, 9 pages.
32. R. Kafieh, **H. Rabbani\***, M. Sonka, M. D. Abramoff, “Intra-Retinal Layer Segmentation of 3D Optical Coherence Tomography Using Coarse Grained Diffusion Map”, *Medical Image Analysis*, vol. 17, no. 8, pp. 907-928, Dec. 2013.
33. R. Kafieh, **H. Rabbani\***, S. Kermani, "A Review of Algorithms for Segmentation of Optical Coherence Tomography from Retina", *Journal of Medical Signals and Sensors*, vol. 3, no. 1, pp. 45-60, 2013.
34. R. Kafieh, **H. Rabbani\***, F. Hajizadeh, M. Ommani, S. Kermani, “An Accurate Multimodal 3D Vessel Segmentation Method Based on Brightness Variations on OCT Layers and Curvelet Domain Fundus Image Analysis”, *IEEE Transactions on Biomedical Engineering*, vol. 60, no. 10, pp. 2815-2823, Oct. 2013.
35. M. Sheikhhosseini, **H. Rabbani\***, M. Zekri, A. Talebi, “Automatic Diagnosis of Malaria Based on Complete Circle-Ellipse Fitting Search Algorithm”, *Journal of Microscopy*, vol. 252, no. 3, pp. 189-203, Dec. 2013.
36. **H. Rabbani\***, M. Sonka, M. D. Abramoff, “Optical Coherence Tomography Noise

Reduction Using Anisotropic Local Bivariate Gaussian Mixture Prior in 3-D Complex Wavelet Domain”, *International Journal of Biomedical Imaging*, vol. 2013, Article ID 417491, 23 pages.

37. M. Golabakhsh, **H. Rabbani\***, “Vessel Based Registration of Fundus and OCT Projection Images of Retina Using a Quadratic Registration Model”, *IET Image Processing*, vol. 7, no. 8, pp. 768-776, Nov. 2013.
38. M. Etehadtavakol\*, E.Y.K. Ng, V. Chandranc, **H. Rabbani**, “Separable and Non-separable Discrete Wavelet Transform based Texture Features and Image Classification of Breast Thermograms”, *Infrared Physics & Technology*, vol. 61, pp. 274-286, Nov. 2013.
39. R. Kafieh, **H. Rabbani\***, M. Sonka, M. D. Abramoff, “Curvature Correction of Retinal OCTs Using Graph-Based Geometry Detection”, *Physics in Medicine & Biology*, vol. 58, pp. 2925-2938, 2013.
40. **H. Rabbani\***, S. Gazor, “Video Denoising in 3-D Complex Wavelet Domain Using Local Bessel K-Form Prior”, *IET Image Processing*, vol. 6, no. 9, pp. 1262-1274, Dec. 2012.
41. M. Esmaeili, **H. Rabbani\***, A. M. Dehnavi, A. Dehghani, “Automatic Detection of Exudates and Optic Disk in Retinal Images Using Curvelet Transform”, *IET Image Processing*, vol. 6, no. 7, pp. 1005-1013, Oct. 2012.
42. SH. Hajeb, **H. Rabbani\***, MR. Akhlaghi “Diabetic Retinopathy Grading by Digital Curvelet Transform”, *Computational and Mathematical Methods in Medicine*, vol. 2012, Article ID 761901, 11 pages, 2012.
43. SH. Hajeb, **H. Rabbani\***, A. M. Dehnavi, MR. Akhlaghi, SH. H. Javanmard, “Analysis of Foveal Avascular Zone for Grading of Diabetic Retinopathy Severity Based on Curvelet Transform”, *Graefe's Archive for Clinical and Experimental Ophthalmology (Springer)*, vol. 250, no. 11, pp. 1607-1614, Nov. 2012.
44. R. Soltanzadeh, **H. Rabbani\***, A. Talebi, “Extraction of Nucleolus Candidate Zone in White Blood Cells of Peripheral Blood Smear Images Using Curvelet Transform”, *Computational and Mathematical Methods in Medicine*, vol. 2012, Article ID 574184, 12 pages, 2012.
45. M. Esmaeili, **H. Rabbani\***, A. Mehri, “Automatic Optic Disk Boundary Extraction by the Use of Curvelet Transform and Deformable Variational Level Set Model”, *Pattern Recognition*, vol. 47, no. 7, pp. 2832-2842, July 2012.
46. **H. Rabbani\***, M. P. Mahjub, E. Farahabadi, A. Farahabadi, A. Mehri, “An Entropy-Based Method for Ischemia Diagnosis Using ECG Signal in Wavelet Domain”, *Journal of Research in Medical Sciences*, vol. 16, no. 11, pp. 1473-1482, 2011.
47. **H. Rabbani\***, “Statistical modeling of low SNR magnetic resonance images in wavelet domain using Laplacian prior and two-sided Rayleigh noise for visual quality improvement”, *Measurement Science Review*, vol. 11, no. 4, pp. 125-130, 2011.
48. F. Rahimi and **H. Rabbani\***, “A dual adaptive watermarking scheme in contourlet domain for DICOM images”, *BioMedical Engineering OnLine*, 10:53, 2011.
49. **H. Rabbani\*** H, M. P. Mahjub, E. Farahabadi, A. Farahabadi, "R Peak Detection in Electrocardiogram Signal Based on an Optimal Combination of Wavelet Transform, Hilbert Transform, and Adaptive Thresholding", *Journal of Medical Signals and Sensors*, vol. 1, no. 2, pp. 91-98, 2011.

50. A. Mehri, E. Farahabadi, **H. Rabbani\***, A. Farahabadi, M. P. Mahjub, N. Rajabi, "Detection and Classification of Cardiac Ischemia by Using Vectorcardiogram Signal via Neural Network", *Journal of Research in Medical Sciences*, vol. 16, no. 2, pp. 136-142, 2011.
51. **H. Rabbani\***, S. Gazor, "Image Denoising Employing Local Mixture Models in Sparse Domains", *IET Image Processing*, vol. 4, no. 5, pp. 413-428, Oct. 2010.
52. **H. Rabbani**, S. Gazor\*, R. Nezafat, "Wavelet-Based 3D Medical Image Denoising Using Bivariate Laplacian Mixture Model", *IEEE Transactions on Biomedical Engineering*, vol. 56, no. 12, pp.2826-2837, Dec. 2009.
53. **H. Rabbani\***, "Image Denoising in Steerable Pyramid Domain Based on a Local Laplace Prior", *Pattern Recognition*, vol. 42, pp. 2181-2193, Sept. 2009.
54. **H. Rabbani**, M. Vafadoost, S. Gazor\*, P. Abolmaesumi, "Speckle Noise Reduction of Medical Ultrasound Images in Complex Wavelet Domain Using Mixture Priors", *IEEE Transactions on Biomedical Engineering*, vol. 55, no.9, pp. 2152-2160, Sept. 2008.
55. **H. Rabbani\***, M. Vafadoost, "Image/Video Denoising Based on a Mixture of Laplace Distributions with Local Parameters in Multidimensional Complex Wavelet Domain", *Signal Processing*, vol. 88, pp. 158-173, Jan. 2008.
56. **H. Rabbani**, M. Vafadoost\*, "Wavelet Based Image Denoising Based on a Mixture of Laplace Distributions", *Iranian Journal of Science & Technology, Transaction B., Engineering*, vol. 30, no. B6., pp. 711-733, 2006.

### Book Chapters

57. Z. Amini, R. Kafieh, H. Rabbani, "Speckle noise reduction and enhancement for OCT images", **Retinal Optical Coherence Tomography Image Analysis**, ISBN 978-981-13-1825-2, Publisher: Springer, 2018.
58. H. Rabbani, R. Kafieh, Z. Amini, "Optical Coherence Tomography Image Analysis", **Wiley Encyclopedia of Electrical and Electronics Engineering**, ISBN 9780471346081, Publisher: John Wiley and Sons, pp. 1–16, 2016.
59. V. Lakshminarayanan, D. Thapa, K. Raahemifar and H. Rabbani, "Compressive Sensing", **The Optics Encyclopedia**, ISBN 9783527600441, Publisher: John Wiley and Sons, pp. 1–26, 2015.
60. Alireza Mehri Dehnavi, Nilufar Salehpour, Hossein Rabbani, Eiman Farahabadi, Amin Farahabadi, "Automatic Analysis of Vectorcardiogram Signal for Detection of Cardiovascular Diseases", **Cardiovascular Disease**, ISBN 978-1-922227-28-7, Publisher: iConcept Press, 2013.
61. Hossein Rabbani, Alireza Mehri Dehnavi and Mehrab Ghanatbari, "Estimation the Depth of Anesthesia by the Use of Artificial Neural Network", **Artificial Neural Networks - Methodological Advances and Biomedical Applications**, ISBN 978-953-307-243-2, Edited by: Kenji Suzuki, Publisher: InTech, April 2011.

### Selected International Conference Papers

62. F. Kiaee, H. Fahimi, **H. Rabbani\***, "Intra-Retinal Layer Segmentation of Optical Coherence Tomography Using 3D Fully Convolutional Networks," accepted in 2018 IEEE International Conference on Image Processing (ICIP), Greece, 2018.
63. M. Mokhtari, **H. Rabbani\*** and A. Mehri-Dehnavi, "Alignment of optic nerve head optical coherence tomography B-scans in right and left eyes," in Proc. 2017 IEEE International Conference on Image Processing (ICIP), China, 2017, 2279-2283.
64. O. Sarrafzadeh, **H. Rabbani\*** and A. Mehri-Dehnavi, "Fast circlet based framework for optic disk detection" in Proc. 2017 IEEE International Conference on Image Processing (ICIP), China, 2017, pp. 3330-3334.
65. Z. Ghasemi, M. Mokhtari, **H. Rabbani\***, S. Farsiu, "Non-Rigid Registration of Fluorescein Angiography and Optical Coherence Tomography B-Scans via Scanning Laser Ophthalmoscope Imaging", in Proc. 39th Annual International Conference of the IEEE Engineering in Medicine and Biology (EMBC), South Korea, 2017, pp. 4415-4418.
66. M. Mokhtari, Z. Ghasemi, **H. Rabbani\***, "Automatic Detection of Hyperreflective Foci in Optical Coherence Tomography B-Scans Using Morphological Component Analysis", in Proc. 39th Annual International Conference of the IEEE Engineering in Medicine and Biology (EMBC), South Korea, 2017, pp. 1497-1500.
67. S. Jorjandi, **H. Rabbani\***, R. Kafieh, Z. Amini, "Statistical Modeling of OCT Images by Asymmetric Normal Laplace Mixture Model", in Proc. 39th Annual International Conference of the IEEE Engineering in Medicine and Biology (EMBC), South Korea, 2017, pp. 4399-4402.
68. M. Mokhtari, **H. Rabbani\***, A. Mehri-Dehnavi, R. Kafieh, "Exact Localization of Breakpoints of Retinal Pigment Epithelium in Optical Coherence Tomography of Optic Nerve Head", in Proc. 39th Annual International Conference of the IEEE Engineering in Medicine and Biology (EMBC), South Korea, 2017, pp. 1505-1508.
69. O. Sarrafzadeh, **H. Rabbani\***, A. Mehri, A. Talebi, "Detecting different sub-types of acute myelogenous leukemia using dictionary learning and sparse representation", in Proc. IEEE International Conference on Image Processing (ICIP), Quebec City, Canada, Sept. 27-30, 2015, pp. 3339-3343.
70. T. Mahmudi, R. Kafieh, **H. Rabbani\***, A. Mehri, "Asymmetry evaluation of fundus images in right and left eyes using radon transform and fractal analysis", in Proc. IEEE International Conference on Image Processing (ICIP), Quebec City, Canada, Sept. 27-30, 2015, pp. 163-167.
71. M. Niknejad, **H. Rabbani\***, M. Babaie-Zadeh, Ch. Jutten, "Image interpolation using Gaussian mixture models with spatially constrained patch clustering", in Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Brisbane, Australia, April 19-24, 2015, pp. 1613-1617.
72. M. Niknejad\*, M. Sadeghi, M. Babaie-Zadeh, **H. Rabbani**, Ch. Jutten, "A Dictionary Learning Method for Sparse Representation Using a Homotopy Approach", Latent Variable Analysis and Signal Separation, vol. 9237 of the series Lecture Notes in Computer Science (LVA/ICA), 2015, pp. 271-278.

73. M. Lashgari, M. Shahmoradi, **H. Rabbani\***, M. Swain, "A fast and accurate dental micro-CT image denoising based on total variation modeling", in Proc. IEEE Workshop on Signal Processing Systems, Hangzhou, China, Oct. 14-16, 2015.
74. O. Sarrafzadeh, A. Mehri, **H. Rabbani\***, N. Ghane, A. Talebi, "Circlet based framework for red blood cells segmentation and counting", in Proc. IEEE Workshop on Signal Processing Systems, Hangzhou, China, Oct. 14-16, 2015.
75. O Sarrafzadeh, A. Mehr, **H. Rabbani\***, A. Talebi, "A simple and accurate method for white blood cells segmentation using k-means algorithm", in Proc. IEEE Workshop on Signal Processing Systems, Hangzhou, China, Oct. 14-16, 2015.
76. M Farahi\*, **H Rabbani**, A Talebi, O Sarrafzadeh, Sh Ensafi, "Automatic segmentation of Leishmania parasite in microscopic images using a modified CV level set method ", in Proc. SPIE 9817, Seventh International Conference on Graphic and Image Processing (ICGIP 2015), 98170K, Oct. 23-25, 2015.
77. R. Shams, **H. Rabbani\***, "A comparison between x-lets in denoising cDNA microarray images", in Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Florence, Italy, May 4-9, 2014, pp. 2483-2487.
78. R. Kafieh, **H. Rabbani\***, "Combination of graph theoretic grouping and time-frequency analysis for image segmentation with an example for EDI-OCT", in Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Florence, Italy, May 4-9, 2014, pp. 5115-5119.
79. R. Kafieh, **H. Rabbani\***, "Combination of graph theoretic grouping and time-frequency analysis for image segmentation with an example for EDI-OCT", in Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Florence, Italy, May 4-9, 2014, pp. 5115-5119.
80. T. Mahmudi, R. Kafieh, **H. Rabbani\***, "Comparison of macular OCTs in right and left eyes of normal people", in Proc. SPIE 9038, Medical Imaging 2014: Biomedical Applications in Molecular, Structural, and Functional Imaging, 90381K, San Diego, California, United States Feb. 15-20, 2014.
81. O. Sarrafzadeh, **H. Rabbani\***, A. Talebi, "The best features selection for Leukocytes classification in blood smear microscopic images", in Proc. SPIE 9041, Medical Imaging 2014: Digital Pathology, 90410P, San Diego, California, United States Feb. 15-20, 2014.
82. F. Ghasemi, **H. Rabbani\***, "A statistical model for 3D segmentation of retinal choroid in optical coherence tomography images", in Proc. SPIE 9038, Medical Imaging 2014: Biomedical Applications in Molecular, Structural, and Functional Imaging, 90381W, San Diego, California, United States Feb. 15-20, 2014.
83. A. Soltani, S. Sadri, **H. Rabbani\***, A. Doost-Hosseini, "Vessel Centerlines Extraction from Fundus Fluorescein Angiogram Based on Hessian Analysis of Directional Curvelet Subbands", in Proc. IEEE 2013 International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Vancouver, Canada, May 26-31, 2013, pp. 1070-1074.
84. R. Kafieh, H. Danesh, **H. Rabbani\***, M. Sonka, M. D. Abramoff, "Vessel Segmentation in Images of Optical Coherence Tomography Using Shadow Information and Thickening of Retinal Nerve Fiber Layer", in Proc. IEEE 2013 International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Vancouver, Canada, May 26-31, 2013, pp. 1075-

1079.

85. R. Kafieh, **H. Rabbani\***, M. Sonka, M. D. Abramoff, "Intra-Retinal Layer Segmentation of Optical Coherence Tomography Using Diffusion Map", in Proc. IEEE 2013 International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Vancouver, Canada, May 26-31, 2013, pp. 1080-1084.
86. R. Kafieh, **H. Rabbani\***, "Optical coherence tomography noise reduction over learned dictionaries with introduction of complex wavelet for start dictionary", in Wavelets and Sparsity XV, Dimitri Van De Ville; Vivek K. Goyal; Manos Papadakis, Editors, in Proc. of SPIE Vol. 8858 (SPIE, Bellingham, WA 2013), 885826.
87. SH. Hajeb, **H. Rabbani\***, "Automatic detection of micro-aneurysms in retinal images based on curvelet transform and morphological operations", in Applications of Digital Image Processing XXXVI, Andrew G. Tescher, Editors, Proceedings of SPIE Vol. 8856 (SPIE, Bellingham, WA 2013), 88561W.
88. SH. Gashmard, A. Mehri, **H. Rabbani\***, "A New Combined Method for Character Recognizing in Farsi Printed Scripts Using PCA", in Proc. ACM International Workshop on Natural Language Processing, Aug. 3-5, 2012, Chennai, India, pp. 812-815.
89. N. Salehpour, A. Mehri, **H. Rabbani\***, M. Behjati, "Partial Linear Transformation of Vectorcardiogram to 12 Lead Electrocardiogram Signals", in Proc. IEEE 12th International Conference on Bioinformatics & Bioengineering, Larnaca, Cyprus, November 11-13, 2012, pp. 91-94.
90. M. Golabakhsh, **H. Rabbani\***, M. Esmaceli, "Detection and Registration of Vessels of Fundus and Oct Images Using Curvelet Analysis", in Proc. IEEE 12th International Conference on Bioinformatics & Bioengineering, Larnaca, Cyprus, November 11-13, 2012, pp. 594-597.
14. N. Salehpour, A. Mehri, **H. Rabbani\***, M. Behjati, "Posterior ECG: Producing a new electrocardiogram signal from vectorcardiogram using partial linear transformation", in Proc. IEEE 12th International Conference on Bioinformatics & Bioengineering, Larnaca, Cyprus, November 11-13, 2012, pp. 95-98.
15. J. Jalili, **H. Rabbani\***, R. Kafieh, A. Mehri, "Forming Projection Images From Each Layer of Retina Using Diffusion Map Based OCT Segmentation", in Proc. 11<sup>th</sup> IEEE International Conference on Information Science, Signal Processing and their Applications, Quebec, Canada, 2012, pp. 930-934.
91. S. Mohammadpour, A. Mehri, **H. Rabbani\***, V. Lakshminarayanan, "A Pre-Compensation Algorithm for Different Optical Aberrations Using an Enhanced Wiener Filter and Edge Tapering", in Proc. 11<sup>th</sup> IEEE International Conference on Information Science, Signal Processing and their Applications, Quebec, Canada, 2012, pp. 935-939.
92. E. Farahabadi, A. Farahabadi, **H. Rabbani\***, M. Parsa Mahjoub, "Detection of QRS Complex in Electrocardiogram Signal Based on a Combination of Hilbert Transform, Wavelet Transform and Adaptive Thresholding," in Proc. IEEE-EMBS International Conference on Biomedical and Health Informatics, China, 2012, pp. 170-173.
93. E. Farahabadi, A. Farahabadi, A. Mehri Dehnavi, **H. Rabbani\***, M. Parsa Mahjoub, "Ischemia Detection via Dynamic Time Warping and Fuzzy Rules", in Proc. IEEE-EMBS International Conference on Biomedical and Health Informatics, 2012, pp. 166-169.

94. **H. Rabbani\***, S. Gazor, "Local probability distribution of natural signals in sparse domains", in Proc. 2011 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Prague Congress Centre (PCC), May 22-27, 2011, pp. 1289-1292, ***The Winner of ICASSP 2011 Travel Grant.***
95. R. Kafieh, **H. Rabbani\***, "Wavelet-Based Medical Infrared Image Noise Reduction Using Local Model for Signal and Noise", in Proc. 2011 IEEE Workshop on Statistical Signal Processing (SSP2011), Nice, France, 2011, pp. 549-552.
96. A. Shirazi, H. Ahmadi Noubari, A. Mehri Dehnavi and **H. Rabbani\***, "Application of wavelets and fractal-based methods for detection of microcalcification in mammograms: a comparative analysis using neural network", in Proc. SPIE 8285, 82857E, 2011.
97. M. Esmaili, **H. Rabbani\***, A. Mehri, A. Dehghani, "A new curvelet transform based method for extraction of red lesions in digital color retinal images", in Proc. 2010 IEEE International Conference on Image Processing (ICIP), Hong Kong, 26-29 Sept. 2010, pp. 4093-4096, ***The Winner of IEEE Signal Processing Society (SPS) Grant.***
98. **H. Rabbani\***, "Video deblurring in complex wavelet domain using local Laplace prior for enhancement and anisotropic spatially adaptive denoising for PSF detection", in Proc. 2010 IEEE International Conference on Image Processing (ICIP), Hong Kong, 26-29 Sept. 2010, pp. 3329-3332.
99. M. Ghanatbari, A. Mehri Dehnavi, **H. Rabbani\***, A. Mahuri, "A comparative study of the output correlations between wavelet transform, neural and neuro fuzzy networks and BIS index for depth of anesthesia", in Proc. IEEE Symposium on Industrial Electronics and Applications (ISIEA 2010), Malaysia, 3-6 Oct. 2010, pp.655-659.
100. F. Rahimi, **H. Rabbani\***, "A Visually imperceptible and robust image watermarking scheme in contourlet domain", in Proc. IEEE International Conference on Signal Processing, China, 24-28 Oct. 2010, pp. 1817-1820.
101. R. Soltanzadeh, **H. Rabbani\***, "Classification of three types of red blood cells in peripheral blood smear based on morphology", in Proc. IEEE International Conference on Signal Processing, China, 24-28 Oct. 2010, pp. 707-710.
102. P. Akbary, **H. Rabbani\***, "Removing power line interference and ECG signal from EMG signal using matching pursuit", in Proc. IEEE International Conference on Signal Processing, China, 24-28 Oct. 2010, pp. 1714-1717.
103. A. Farahabadi, E. Farahabadi, **H. Rabbani\***, A. Mehri, M. P. Mahjoob, "An entropy-based method for ischemia diagnosis using ECG signal in wavelet domain", in Proc. IEEE International Conference on Signal Processing, China, 24-28 Oct. 2010, pp. 195-198.
104. Z. Mirzadeh, R. Mehri, **H. Rabbani\***, "A fast method for video deblurring based on a combination of gradient methods and denoising algorithms in Matlab and C environments", in Proc. IS&T/SPIE Electronic Imaging 2010, San Jose Convention Center San Jose, Proc. SPIE Vol. 7529, CA United States, 17 - 21 January 2010.
105. M. Esmaili, **H. Rabbani\***, A. Mehri, A. Dehghani, "Extraction of retinal blood vessels by curvelet transform", in Proc. 2009 IEEE International Conference on Image Processing (ICIP), Cairo, Egypt, Nov. 7-11, 2009, pp. 3353-3356, ***The Winner of IEEE ICIP Student Author Participation Award.***



106. M. Esmaili, **H. Rabbani\***, A. Mehri, A. Dehghani, “Automatic optic disk detection by the use of curvelet transform”, in Proc. 9th IEEE International Conference on Information Technology and Applications in Biomedicine (ITAB), Cyprus, 5-7 November, 2009.
107. M. Ghanatbari, A. Mehri, **H. Rabbani\***, A. Mahuri, “Estimating the depth of anesthesia by applying sub-parameters to an artificial neural network during general anesthesia”, in Proc. 9th IEEE International Conference on Information Technology and Applications in Biomedicine (ITAB), Cyprus, 5-7 November, 2009.
108. A. Farahabadi, E. Farahabadi, **H. Rabbani\***, A. Mehri, M. P. Mahjoob, “Noise removal from Electrocardiogram Signal Employing an Artificial Neural Network in Wavelet Domain”, in Proc. 9th IEEE International Conference on Information Technology and Applications in Biomedicine (ITAB), Cyprus, 5-7 November, 2009.
109. **H. Rabbani\***, “Shape adaptive estimation of variance in steerable pyramid domain and its application for spatially adaptive image enhancement”, in Proc. 2009 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Taipei, Taiwan, April 19 - 24, 2009.
110. **H. Rabbani\***, “Statistical modeling of low SNR magnetic resonance images in wavelet domain using Laplacian prior and two-sided Rayleigh noise for visual quality improvement”, in Proc. 5<sup>th</sup> IEEE-EMBS International Conference on Information Technology and Application in Biomedicine in conjunction with 2nd International Symposium & Summer School on Biomedical and Health Engineering, Shenzhen, China, May 30-31, 2008.
111. **H. Rabbani\***, “Abdominal CT image denoising based on a Laplace distribution with local variance in steerable pyramid domain”, in Proc. 5<sup>th</sup> IEEE-EMBS International Conference on Information Technology and Application in Biomedicine in conjunction with 2nd International Symposium & Summer School on Biomedical and Health Engineering, Shenzhen, China, May 30-31, 2008.
112. **H. Rabbani\***, “A fast method for despeckling in wavelet domain using Laplacian prior and Rayleigh noise”, in Proc. 5<sup>th</sup> IEEE-EMBS Int. Conf. on Information Technology and Application in Biomedicine in conjunction with 2nd International Symposium & Summer School on Biomedical and Health Engineering, Shenzhen, China, May 30-31, 2008.
113. **H. Rabbani\***, M. Vafadoost, I. Selesnick, “Local Cauchy distribution for video denoising in 3D complex wavelet domain”, in Proc. SPIE International Conference on Applications of Digital Image Processing XXX, vol. 6696, San Diego, California, USA, Aug. 26–30, 2007.
114. **H. Rabbani\***, M. Vafadoost, I. Selesnick, “Video denoising based on a Laplace distribution with local variance in 3D complex wavelet domain”, in Proc. SPIE International Conference on Wavelets XII, vol. 6701, San Diego, California, USA, Aug. 26–30, 2007.
115. **H. Rabbani\***, M. Vafadoost, I. Selesnick, “Modeling statistical properties of wavelets using a mixture of bivariate Cauchy models and its application for image denoising in complex wavelet domain”, in Proc. SPIE International Conference on Wavelets XII, vol. 6701, San Diego, California, USA, Aug. 26–30, 2007.
116. **H. Rabbani\***, M. Vafadoost, S. Gazor, “Image denoising in curvelet transform domain using Gaussian mixture model with local parameters for distribution of noise free coefficients”, in Proc. 4th IEEE-EMBS International Summer School and Symposium on Medical Devices and Biosensors (ISSS-MDBS 2007), Catharine's College, Cambridge, UK,

Aug. 19-22, 2007.

117. **H. Rabbani\***, M. Vafadoost, S. Gazor, "Medical volume noise reduction employing a Laplace distribution with local variance for modeling contourlet coefficients", in Proc. 4th IEEE-EMBS International Summer School and Symposium on Medical Devices and Biosensors (ISSS-MDBS 2007), Catharine's College, Cambridge, UK, Aug. 19-22, 2007.
118. **H. Rabbani\***, M. Vafadoost, I. Selesnick, S. Gazor "Image denoising employing a mixture of circular symmetric Laplacian models with local parameters in complex wavelet domain", in Proc. 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Hawai'i Convention Center, Honolulu, USA, April 15 - 20, 2007.
119. **H. Rabbani\***, M. Vafadoost "Image denoising in complex wavelet domain using a mixture of bivariate Laplacian distributions with local parameters ", in Proc. of SPIE Visual Information Processing XVI, vol. 6575, USA, April 9-13, 2007.
120. **H. Rabbani\***, M. Vafadust, S. Gazor, "Image denoising based on a mixture of Laplace distributions with local parameters in complex wavelet domain", in Proc. 13th IEEE International Conference on Image Processing (ICIP), Atlanta, October 8-11, 2006.
121. **H. Rabbani\***, M. Vafadust, I. Selesnick, S.Gazor "Image denoising based on a mixture of bivariate Laplacian models in complex wavelet domain", in Proc. IEEE Int. Workshop on Multimedia Signal Processing, MMSP 2006, Victoria, BC, Canada, October 3-6, 2006.
122. **H. Rabbani\***, M. Vafadoost, S. Gazor, I. Selesnick, "Image denoising based on a bivariate Cauchy distribution with local scaling factor in complex wavelet domain", in Proc. IEEE Signal Processing Society 12th Digital Signal Processing Workshop & 4th Signal Processing Education Workshop, Jackson Lake Lodge, Wyoming, USA, September 24-27, 2006.
123. **H. Rabbani\***, M. Vafadust, S. Gazor "Medical image noise reduction using a mixture of bivariate Gaussian distributions with local parameters in complex wavelet domain", in Proc. IEEE Int. Conf. on Biomedical and Pharmaceutical Eng. , Singapore, Dec. 11-14, 2006.
124. **H. Rabbani\***, M. Vafadoost, I. Selesnick, "Wavelet based image denoising with a mixture of Gaussian distributions with local parameters", in Proc. 48th IEEE International Symposium ELMAR-2006 focused on Multimedia Signal Processing and Communications, Zadar, Croatia, June 07-09, 2006.
125. **H. Rabbani\***, M. Vafadust, S. Gazor, "Video denoising based on a bivariate Cauchy distribution in 3-d complex wavelet domain", in Proc. IEEE International Symposium on Signal Processing and its Applications, United Arab Emirates, February 12 – 15, 2007.
126. N. Karami\*, **H. Rabbani**, "A Dictionary Learning Based Method for Detection of Diabetic Retinopathy in Color Fundus Images," in Proc. 10th Iranian Conference on Machine Vision and Image Processing (MVIP2017), Isfahan University of Technology, 22-23 Nov. 2017.
127. R. Rasti\*, A. Mehri, **H. Rabbani**, "Wavelet-based Convolutional Mixture of Experts Model: An Application to Automatic Diagnosis of Abnormal Macula in Retinal Optical Coherence Tomography Images", in Proc. 10th Iranian Conference on Machine Vision and Image Processing (MVIP2017), Isfahan University of Technology, 22-23 Nov. 2017.
128. Sh. Azimi, **H. Rabbani\***, "A level set based method for lung segmentation in CT images," 22nd Iranian Conference on Electrical Engineering (ICEE2014), pp.1917-1920, 20-22 May 2014.

### Selected National Conference Papers

129. M. R. Naeemabadi\*, N. Amirahmadi Chomachar, M. R. Hosseini, **H. Rabbani**, "Online heart rate measurement using 8-bit microcontrollers in mobile monitoring", in Proc. 19<sup>th</sup> Iranian Conference of Electrical Engineering (ICEE2011), 17-19 May 2011, Amirkabir Univ. of Technology, Tehran, Iran.
130. Sh. Gashmard\*, A. Mehridehnavi and **H. Rabbani**, "Persian script character recognition using PCA", in Proc. 17th Iranian Conference of Biomedical Engineering (ICBME2010), 3-4 November 2010, Isfahan, Iran.
131. A. Farahabadi, E. Farahabadi, **H. Rabbani\***, A. Mehri, M. P. Mahjoob, "Analysis of Frank VCG and Synthesized VCG for Selection of Optimal Vector Cardiogram", in Proc. 17th Iranian Conf. of Biomedical Engineering (ICBME2010), 3-4 November 2010, Isfahan, Iran.
132. F. Rahimi, **H. Rabbani\***, S. Kermani, "A Dual Adaptive Watermarking Scheme in Contourlet Domain for DICOM Images", in Proc. 17th Iranian Conference of Biomedical Engineering (ICBME2010), 3-4 November 2010, Isfahan, Iran.
133. A. Shirazinowdeh, **H. Rabbani\***, A. Mehridehnavi and H. Ahmadinoubari, "Detection of Cancerous Zones in Mammograms using Fractal Modeling and Classification by Probabilistic Neural Network", in Proc. 17th Iranian Conference of Biomedical Engineering (ICBME2010), 3-4 November 2010, Isfahan, Iran.
134. M. Esmaeili\*, **H. Rabbani**, A. Mehri, A. Dehghani, "Enhancement of Retinal Images using Curvelets", in Proc. 17th Iranian Conference on Electrical Engineering (ICEE2009), Iran University of Science and Technology, 12 -14 May, 2009.
135. M. Ghanatbari\*, **H. Rabbani**, "Salt & Pepper Noise Reduction Based on Neural Network and Recursive Gaussian Filter", in Proc. 5th Iranian Conference on Machine Vision and Image Processing (MVIP2008), University of Tabriz, 4-6 November 2008.
136. **H. Rabbani\***, M. Vafadoost, " Video Denoising Based on a Gaussian Distributions with Local Variance in 3-D Complex Wavelet Domain", in Proc. of 12th International Computer Society of Iran Computer Conference (CSICC 2007), Tehran, 20-22 February 2007.
137. **H. Rabbani\***, M. Vafadoost, "Edge Detection with Complex Wavelet Transform", in Proc. 7th Iranian Congress of Medical Physics, Ahwaz, 13-15 February 2007.
138. **H. Rabbani\***, M. Vafadoost, S. Kasaei, "Scratch Removal with Kalman Filter in Complex Wavelet Domain", in Proc. 11th International Computer Society of Iran Computer Conference (CSICC 2006), Tehran, 24-26 January 2006.
139. **H. Rabbani\***, M. Vafadoost, S. Kasaei, "Scratch Removal with Kalman Filter in 3D Wavelet Domain", in Proc. 11th International Computer Society of Iran Computer Conference (CSICC 2006), Tehran, 24-26 January 2006.
140. L. Ghaedi, A. Mehri, **H. Rabbani\***, "A Nonlinear Adaptive Method for Removal of Power-line Noise from ECG", in Proc. 12th Iranian Conference of Biomedical Engineering (ICBME2005), Tabriz, 16-18 November 2005.
141. M. Daliri, **H. Rabbani\***, M. Rafinia, "Angle Detection for Biomaterial based on Image Processing Methods", in Proc. 7th Annual Research Congress of Iranian Medical Sciences Students, Tehran, 30 May-1 June 2006.

### National Journal Papers

142. L. Niknam, **H. Rabbani\***, "Morphological Component Analysis for Automatic Segmentation of Six Lower Retina Layers in Optical Coherence Tomography Images", Journal of Isfahan Medical School, vol. 34, no. 373, 1st week, May 2016.
143. A. Ahdi, **H. Rabbani\***, A. Vard, "Registration of Optical Coherence Tomography (OCT) of Optic Nerve Head and Fundus Images Using Speeded-Up Robust Features (SURF) and Random Sample Consensus (RANSAC) Algorithms", Journal of Isfahan Medical School, vol. 33, no. 350, pp. 2026-2035, 2016.
144. M. Mokhtari, **H. Rabbani\***, A. M. Dehnavi, M. Akhlaghi, "Local comparison of cup-to-disc ratio in right and left eyes via optical coherence tomography B-scans of optic nerve head", Journal of Isfahan Medical School, vol. 33, no. 367, pp. 2381-2387, 2016.
145. Z. Saeedizadeh, A. Talebi\*, A. Mehri, **H. Rabbani**, O. Sarrafzadeh, "Extraction and Recognition of Myeloma Cell in Microscopic Bone Marrow Aspiration Images", Journal of Isfahan Medical School, vol. 32, no. 310, 3rd week, Jan. 2015.
146. M. Momenzadeh, A. Talebi, A. Mehri\*, **H. Rabbani**, "Vulvovaginal Candidiasis Diagnosis by Automatic Extraction of Candida Fungus from Pap Smear Images", Journal of Isfahan Medical School, vol. 32, no. 304, first week, Dec. 2014.
147. M. Naeemabadi, A. Mehri\*, **H. Rabbani**, "Statistical Analysis of Encryption Quality for Medical Images Based on Rijndael Encryption Algorithm Using Both Static and Chaotic Cipher Key", Journal of Health and Biomedical Informatics, vol. 1, no. 1, pp. 32-44, 2014.
148. M. Farahi, **H. Rabbani\***, A. Mehri, "Automatic Boundary Extraction of Leishman Bodies in Bone Marrow Samples from Patients with Visceral Leishmaniasis", Journal of Isfahan Medical School, vol. 32, no. 286, 3rd week, July 2014.
149. T. Mahmudi, R. Kafieh, **H. Rabbani\***, A. Mehri, M. R. Akhlaghi, Kh. Arbabian, M. Ahmadi, "Evaluation of Asymmetry of Retinal Nerve Fiber Layer and Total Retina in Right and Left Eyes of Normal Subjects Using Extracted Features from Optical Coherence Tomography", Journal of Isfahan Medical School, vol. 31, no. 247, first week, Oct. 2013.
150. Z. Amini\*, **H. Rabbani**, "EEG- based Seizure detection by Gaussian Process model", Journal of Isfahan Medical School, vol. 31, no. 243, first week, Aug. 2013.
151. H. Danesh, R. Kafieh, **H. Rabbani\***, "Automated Choroidal Segmentation in Enhanced Depth Imaging Optical Coherence Tomography Images", Journal of Isfahan Medical School, vol. 31, no. 230, 4th week, May 2013.
152. J. Jalili, **H. Rabbani\***, A. Mehri, M. R. Akhlaghi, "Formation and Fusion of Projection Images from 11 Layers of Retina Using Statistical Indicators to Obtain an Image with Appropriate Contrast from the Retinal Depth", Journal of Isfahan Medical School, vol. 31, no. 255, first week, Dec. 2013.
153. S. Mohammadpour, Alireza Mehri\*, **H. Rabbani**, "A Method for Pre-Compensation of Digital Images Based on Total Variation Deconvolution, and Comparing it with Wiener Deconvolution, to Enhance Visual Efficiency In The Presence Of Higher Order Ocular Optical Aberrations", Journal of Isfahan Medical School, vol. 31, no. 223, first week, April 2013.
154. A. Farahabadi, E. Farahabadi, **H. Rabbani\***, M. Rezvani, "An Automatic Method for Measuring The Angle of Lumbar Lordosis", Journal of Isfahan Medical School, vol. 30, no. 200, 2nd week, pp. 1145-1152, 2013.

155. SH. Gashmard, A. Mehri, **H. Rabbani\***, "Character Recognition in Farsi Printed Scripts Using Principal Component", Journal of Isfahan Medical School, vol. 29, no. 174, special issue (biomedical engineering), 2012.
156. F. Rahimi, **H. Rabbani\***, S. Kermani, "Comparison between Medical Image Watermarking in Wavelet, Contourlet, Curvelet and Complex Wavelet Domains", Journal of Isfahan Medical School, vol. 29, no. 171, 3rd week, March 2012.
157. R. Soltanzadeh, **H. Rabbani\***, A. Talebi, "Automatic Extraction of Nucleus and Cytoplasm in White Blood Cells of Peripheral Blood Smear", Journal of Isfahan Medical School, vol. 29, no. 174, special issue (biomedical engineering), 2012.
158. **H. Rabbani\***, "Deblurring of medical ultrasonic images using Least Squared Method for Detection and Non-Isotropic Window-Based Denoising and Wavelet-based Denoising for Enhancement", Iranian Journal of Biomedical Engineering, vol. 3, no. 1, pp. 1-14, 2010.
159. **H. Rabbani\***, M. Vafadoost, "Abdominal CT Image Enhancement in Complex Wavelet Domain Using MMSE Estimator and Laplacian Mixture Prior", Iranian Journal of Electrical and Computer Engineering, vol. 7, no. 2, pp. 162-169, 2010.
160. **H. Rabbani\***, M. Vafadoost, S. Kasaei, "Edge Detection Using Complex Wavelet Transform", Esteghlal Journal of Engineering, vol. 28, no. 1, pp. 17-35, 2009.

#### **Submitted Papers (Under Review)**

- ✓ "Image Analysis in In-Vivo Stem Cell Tracking"
- ✓ "The hp-version of Finite Element Method for Electrical Impedance Tomography with EIDORS"
- ✓ "Interdisciplinary Researches in Iran I-VI"
- ✓ "Circular Symmetric Laplacian Mixture Model in Wavelet Diffusion for Dental Image Denoising"
- ✓ "Detection and Classification of Breast Cancer in Wavelet Sub-bands of Fractal Segmented Cancerous Zones"
- ✓ "Hybrid Method for Prediction of Metastasis in Breast Cancer Patients Using Gene Expression Signals"
- ✓ "Bio-Signal and System Modeling: From Image Processing to System Biology"
- ✓ "Using protein interaction database and support vector machine to improve gene signatures for prediction of breast cancer recurrence"
- ✓ "Designing and implementing bio-impedance spectroscopy device by measuring impedance in a mouse tissue"
- ✓ "Assessment of TGF- $\beta$ 3 on production of aggrecan by human articular chondrocytes in pellet culture system"
- ✓ "An Automatic Algorithm for Segmentation of the Boundaries of Corneal Layers in Optical Coherence Tomography Images using Gaussian Mixture Model"

## Under Preparation Papers

- ✓ "Statistical Modeling of Speckle in Optical Coherence Tomography Images"
- ✓ "Automatic Symptomatic Exudate-Associated Derangement (SEAD) Detection in Optical Coherence Tomography"
- ✓ "Image Modeling Using Spherically Invariance Random Processes"
- ✓ "Gauss-Taylor Expansion: A New Model for Statistical Modeling of Images in Sparse Domains"
- ✓ "On the Local EM Algorithm"
- ✓ "A New Speckle Noise Reduction Method in a Bayesian Framework"
- ✓ "A Two-Step Video Denoising Method Based on an Accurate Estimation of Local Variance in a Bayesian Framework "

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